

Appendix A

CONTENT AREA	CURRENT REQUIREMENT	PROPOSED CHANGE	RATIONALE FOR PROPOSED CHANGE	IMPLICATIONS
MATHEMATICS	Three (3) credits including Algebra I, Geometry, and one (1) elective as provided in the program of studies, 704 KAR 3:303.	Mathematics – four (4) credits to include the content strands of number and computation, geometry and measurement, probability and statistics, and algebraic ideas and including the following minimum requirements: 1. One mathematics course taken each year of high school. 2. Required courses shall include: Algebra I, Geometry, Algebra II, and a fourth standards-based mathematics credit to ensure readiness for postsecondary education or the workforce based on the student's Individual Graduation Plan. 3. Minimum course for credit shall be Algebra I.	<p>As noted in <i>An Action Agenda for Improving America's High Schools</i>, the report of the 2005 National Education Summit on High Schools, business leaders and college presidents are having to spend billions of dollars annually to provide their employees and students with the skills and knowledge they should have attained in high school. Nearly a third of high school graduates who go on to college require immediate placement in remedial education courses. Each year taxpayers pay an estimated \$1 billion to \$2 billion to provide remedial education to students at public universities and community colleges, while deficits in basic skills cost business, colleges, and under-prepared high school graduates as much as \$16 billion in lost productivity and remedial costs.</p> <p>The report goes on to indicate that roughly 60% of the jobs in today's labor market require at least some postsecondary education, and that percentage is expected to increase in the future. Jobs for the 21st century require more sophisticated skills and knowledge. An Achieve, Inc., study of high school graduation requirements, <i>The Expectations Gap</i>, reports that a wide range of economic, education, and business experts point to the fact that good jobs require more mathematics and English than ever before, and that workers will need some postsecondary education or training – whether it is in the form of two- or four-year college coursework, apprenticeships, or the military – to meet the needs of the high-performance workplace. In addition, data indicates that there is a strong correlation between taking higher-level mathematics courses in high school and achieving success in college and employment in high-growth, high-performance jobs. A report by Educational Testing Service researchers Carnevale and Desrochers found that 84% of those who currently hold highly paid professional jobs had taken Algebra II or higher as their last high school mathematics course. Among those who hold well-paid, white-collar, skilled jobs, 67% had taken Algebra II or a higher-level mathematics course, and 84% had taken at least Geometry.</p> <p>It was the second recommendation of the national education summit on high schools and the first recommendation of the Achieve study of high school graduation requirements that all students should complete a</p>	<p>There may be an increased demand for mathematics teachers.</p> <p>Some of the high school credits could be earned in the middle level and the preparation of middle level teachers for the teaching of higher-level mathematics is a concern for some.</p> <p>Increased graduation requirements in mathematics will not in itself lead to a change in courses. Accountability will need to be built in to make sure that mathematics courses are standards-based and rigorous. End-of-course assessments could be tools for accountability.</p> <p>No one has studied the level of teacher preparation necessary to successfully teach Algebra II or the institutional capacity needed to implement increased mathematics requirements.</p>

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			common set of high school courses that will provide them with the skills and knowledge they need for college and work. At a minimum, course requirements for high school graduation need to include four years of rigorous English and a mathematics curriculum that teaches the competencies of Algebra I, Geometry, Algebra II, and data analysis and statistics. <i>The Expectations Gap</i> also reports that there is a growing consensus that students should take a mathematics course during their senior year in high school – preferably a course beyond Algebra II – to ensure that they continue to strengthen their knowledge and skills.	
SCIENCE	Three (3) credits including life science, physical science, and earth and space science as provided in the program of studies, 704 KAR 3:303.	Three (3) credits to include the content strands of scientific inquiry, conceptual understandings, applications and connections that shall incorporate lab-based scientific investigation experiences.	<p>Based upon current research around science teaching and learning, as well as general cognitive research, and in keeping with the position of the National Science Teachers Association regarding laboratory-based science, the regulation regarding science instruction should suggest:</p> <p>Science teaching and learning should be based on conceptual development and relevant application of scientific understandings, incorporating inquiry-based teaching and learning strategies. "Inquiry" refers to a collection of processes used to gain understanding of the natural or material world that leads to asking questions and making discoveries in the search for new understandings. Evidence is collected via investigative or non-investigative research. Looking for relationships (i.e., hypothesizing) and experimental design are key to the inquiry process. Laboratory experiences (experiences which allow for direct interaction with the natural and/or material world or with data from the natural and/or material world using tools, data collection techniques, models and theories of science) are an integral part of the nature of science, and should be included in every course for every student. These laboratory experiences should be designed with clear learning outcomes in mind, thoughtfully sequenced into the flow of classroom instruction, designed to integrate the learning of science with learning about the processes of science, and should incorporate ongoing student reflection and discussion.</p> <p>Statement based on the following resources: National Science Teachers Association position statement on Laboratory Science, NSTA Board of Directors, January 1990; National Research Council Report: <u><i>America's Lab Report: Investigations in High School Science</i></u>, 2005</p>	Teachers may not currently be prepared to teach using methods that incorporate true lab-based scientific investigation experiences.

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History and Appreciation of Visual and Performing Arts	History and appreciation of visual and performing arts (or another arts course which incorporates this content – one (1) credit.	History and appreciation of visual and performing arts to include the content strands of arts, dance, music, theatre, and visual arts (or another arts course which incorporates this content) or a standards-based specialized course based on the student's Individual Graduation Plan-one (1) credit.	In late 2003, the Arts Advisory Group noted that the Kentucky <i>Program of Studies</i> is not fully aligned with the <i>National Standards for Education in the Arts</i> . The national standards propose giving students the option of specializing in one or more art forms at the high school level, while in Kentucky this is not an option. All Kentucky high school students are required to take the course titled History and Appreciation of Visual and Performing Arts, a general arts survey course, to meet the requirements for graduation from high school. The Arts Task Force, a group brought together to study arts education in Kentucky, has recommended that Kentucky move toward full alignment with the national standards.	If additional high school graduation requirements are added there will be a significant impact on the master schedule of every high school. Adding more courses to graduation requirements will result in fewer opportunities for students to schedule elective courses. The limited number of courses a student can take in a semester or year further complicates this. Even now, prior to adding graduation requirements, many students are faced with dropping their elective applied arts courses so that they can take the History and Appreciation of Visual and Performing Arts requirement. Allowing current and future elective courses in the arts to fulfill the graduation requirement will help to alleviate some stress on the students' schedules and allow them more choice in their studies.
Electives	Seven (7) credits.	(h) Electives – six (6) credits including four (4) standards-based courses in an academic or career concentration based on the student's Individual Graduation Plan (IGP) and postsecondary goals.	<p>It is important that all students establish goals and plans for careers and postsecondary education following high school graduation. These goals will be useful in guiding and advising students in selecting courses of study to ensure they are prepared for postsecondary education or a career upon graduation from high school. No longer is it sufficient that students only complete the core academic course requirements. All students need a career or academic focus as they move through high school. A career or academic focus gives students a purpose and motivation for achieving excellence if they see the connection to their career or postsecondary education goals.</p> <p>The Southern Regional Education Board (SREB) has documented that students completing 4 credits in a career or academic concentration, above the core curriculum, have higher student achievement. Therefore, SREB is</p>	The IGP process will need to be implemented to a high level in order for students to be able to make decisions about electives that are closely tied to their IGP and postsecondary goals. Professional development will be needed to help districts implement a planning process that reflects best practice.

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			<p>recommending that all students complete 4 credits in a career or academic concentration.</p> <p>Kentucky Core Content Test data has revealed that students concentrating in a career and technical education sequence of courses, in addition to the core required curriculum, have a higher rate of gain in overall academic achievement than other students. Between 2001 and 2004 students with a career and technical concentration had an overall academic index increase of 9.3% as compared to 6.8% for all students.</p>	

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IGP Accountability	Until the graduating class of 2010, each student in a common school shall complete an Individual Graduation Plan which incorporates emphasis on career development.	<p>Schools shall develop an Individual Graduation Plan for each student. The plan will emphasize career development and specifically address Vocational Studies Academic Expectations 2.36-2.38 as defined in Academic Expectations and 703 KAR 4:060.</p> <p>(a) The development of an Individual Graduation Plan for each student shall begin by the end of the 6th grade year and shall be based on guidance and advising provided throughout middle school.</p> <p>(b) The Individual Graduation Plan shall set learning goals for students based on academic and career interests and shall identify required academic and elective courses aligned to the student's postsecondary goals.</p> <p>(c) Middle schools and high schools shall work cooperatively to initiate Individual Graduation Plan development and to ensure that, beginning in the sixth grade, each student and parent shall receive sufficient information and advising</p>	A recent student survey completed by the National Governors Association, which included more than 10,000 high school students indicated that 71% of students believe that taking courses related to the kinds of jobs they want is important to improving high schools. As students move through high school in becoming prepared for successful entry into postsecondary education or a career, and they see the relevance of the courses and curriculum to their career and postsecondary plans, they will become more engaged in learning and motivated to improve their performance.	<p>The IGP process will need to be implemented to a high level in order for students to be able to make decisions about electives that are closely tied to their IGP and postsecondary goals. Professional development will be needed to help districts implement a planning process that reflects best practice.</p> <p>The regulation (703 KAR 5:020) that defines the Accountability Index would need to be revised to make the IGP implementation or results part of the Accountability formula.</p>

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		<p>regarding high school course sequences and postsecondary opportunities to make informed decisions regarding the development of an Individual Graduation Plan.</p> <p>(d) Schools shall maintain each student's Individual Graduation Plan. The Individual Graduation Plan shall be reviewed at least annually and be approved by the student, parents, and school officials.</p> <p>(e) Districts and schools shall implement an advising and guidance process to provide support for the development and implementation of each student's Individual Graduation Plan and a method to evaluate the effectiveness and results of the process. The evaluation method shall include input from students, parents and school staff.</p> <p>(f) Effectiveness and results of the Individual Graduation Plan process shall be factored into the Accountability Index.</p>		